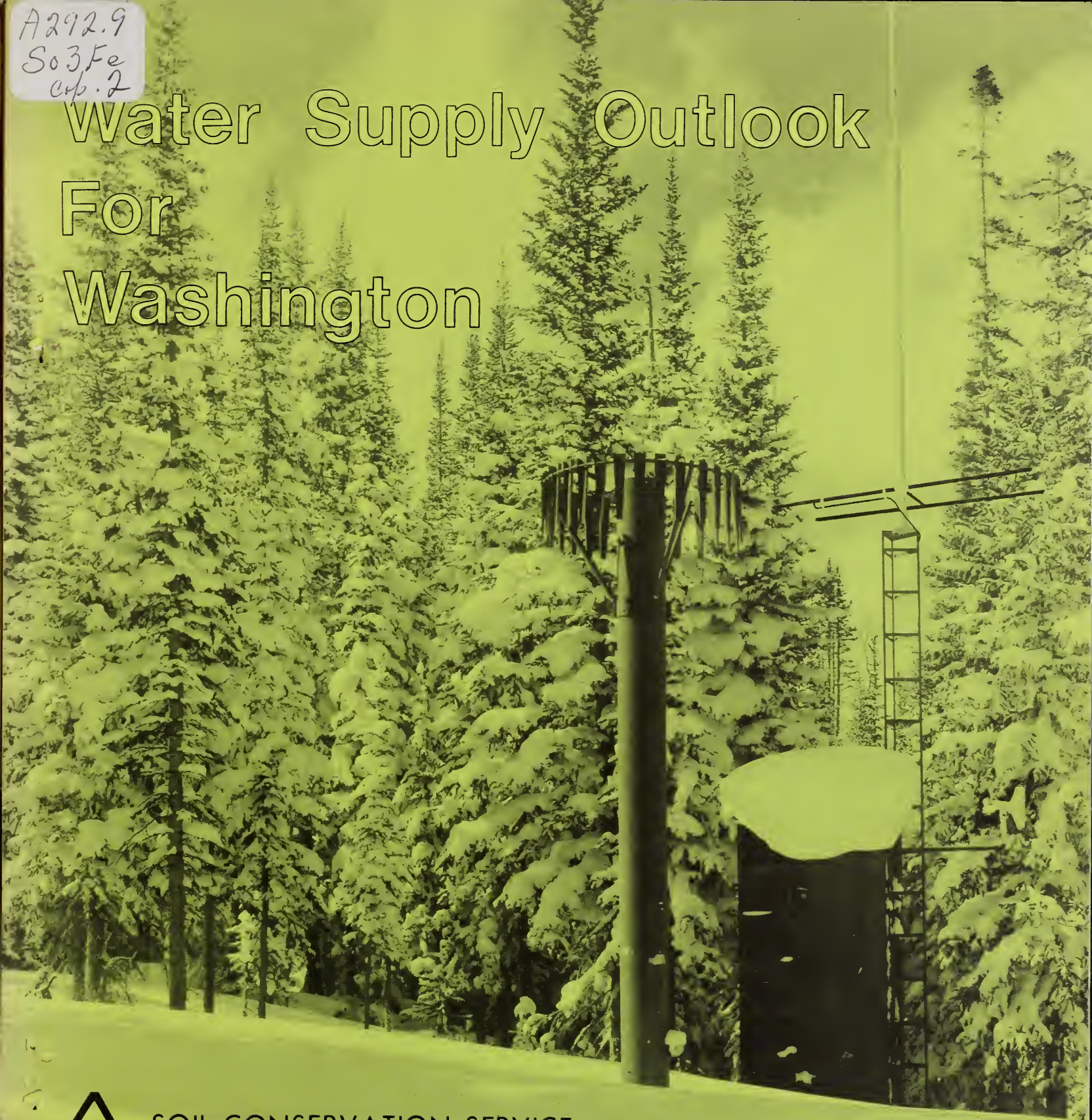


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Water Supply Outlook For Washington



SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Cooperating with

DEPARTMENT OF ECOLOGY STATE OF WASHINGTON

AS OF
FEB. 1, 1979

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: VIEW OF A SNOTEL DATA SITE IN THE SNOWY RANGE IN WYOMING. TALL CYLINDRICAL DEVICE IS A PRECIPITATION GAGE. SNOW PILLOWS ON THE GROUND NOT VISIBLE DUE TO SNOW COVER. SHELTER HOUSE, ANTENNA TOWER, ANTENNA, AND TEMPERATURE UNIT ARE VISIBLE BEHIND THE PRECIPITATION GAGE.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, Federal Building, 230 N. First Ave., Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno, Nevada 89505
Oregon	1220 S. W. Third Ave., Portland, Oregon 97204
Utah	4420 Federal Bldg., 125 South State St., Salt Lake City, Utah 84138
Washington	360 U. S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82602

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Snow Surveys Branch, California Department of Water Resources, P.O. Box 388, Sacramento, California 95802 --- for British Columbia by the Ministry of the Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia V8V 1X5 --- for Yukon Territory by the Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory Y1A 3V1 --- and for Alberta, Saskatchewan, and N.W.T. by the Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta T3C 1A6.



WATER SUPPLY OUTLOOK FOR WASHINGTON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

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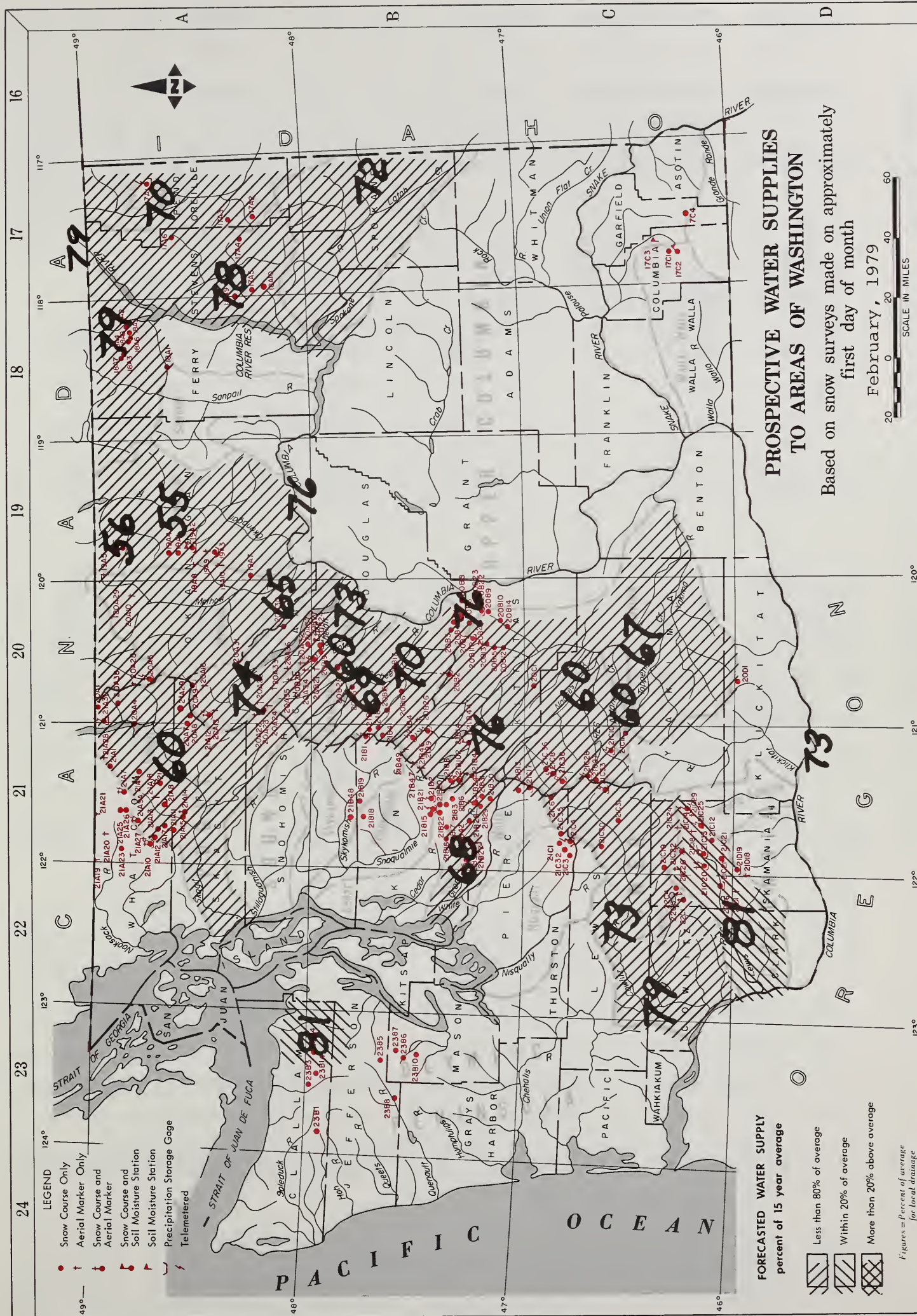
In Cooperation with

WILBUR G. HALLAUER
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STATE OF WASHINGTON

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and
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SOIL CONSERVATION SERVICE
360 U.S. COURTHOUSE
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INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE					
Pend Oreille River					
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1P	24	31N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970
Kettle River					
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A4	5	38N	36E	3170
Goat Creek	18A5	26	39N	35E	3595
Snow Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2720
Summit G. S.	18A7	20	39N	35E	4600
Colville River					
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chewelah	17A4	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4990
Togo	18A10	6	29N	38E	3370
Sonpail River					
Sherman Creek Pass	18A1	19	36N	35E	5350
Okonogon River					
Clark	19A8a	2	36N	23E	7000
Muckumuck	19A9a	20	36N	24E	6750
Mutton Creek No. 1	19A1	30	37N	24E	5700
Mutton Creek No. 2	19A4	19	37N	24E	6000
Poyayfen	20A28a	32	40N	18E	4300
Rusty Creek	19A3P	18	35N	24E	4000
Salmon Meadows	19A2PM	33	37N	24E	4500
Starvation Min.	19A10a	15	35N	23E	6750
Touts Coulee	19A6	30	39N	25E	2845
Methow River					
Billy Goat Pass	20A10a	10	38N	20E	6400
Dollar Wolf	20A29a	8	39N	20E	7000
Harts Pass	20A5AP	7	37N	18E	6500
Horseshoe Basin	19A5a	15	40N	23E	7000
Loup Loup	19A7	36	34N	23E	4650
Chelan Lake Basin					
Cloudy Pass	20A22a	12	31N	15E	6500
Greenwood Flat	20A25a	3	31N	16E	3540
Little Meadows	20A24a	8	31N	16E	5275
Lymon Lake	20A23a	18	31N	16E	5900
Park Creek Flat	20A13a	19	34N	16E	2220
Park Creek Ridge	20A12a	18	34N	16E	4600
Petersons	20A16a	3	34N	17E	3730
Rainy Pass	20A9P	21	35N	17E	4780
Safety Harbor	20A30a	32	31N	20E	6300
War Creek Pass	20A31a	34	33N	18E	6500
Entiat River					
Blue Creek G. S.	20B28a	19	28N	18E	5425
Brief	20B19	34	28N	19E	1600
Entiat Meadows	20A33a	28	31N	17E	4540
Entiat River Trail	20A34a	2	28N	17E	3325
Four Mile Ridge	20B27a	15	28N	19E	6800
Fox Camp	20A36a	17	30N	18E	6510
Pope Ridge	20B20P	22	29N	18E	3540
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	3540
Pugh Ridge	20A32a	34	30N	18E	6725
Shady Pass	20A37	20	29N	19E	6200
Snow Brushy	20A35a	21	30N	17E	3910
Tommy Creek	20B21a	10	28N	18E	4900
Wenatchee River					
Berne-Mill Creek	21B23	7	26N	15E	3170
Berne-Mill Creek (New)	21B41SP	13	26N	14E	3240
Blewett Pass No. 2	20B2P	35	22N	17E	4270
Chiwaukum G. S.	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Leavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B45	14	26N	13E	4070
Stevens Pass Sand Shed	21B45	12	26N	19E	3700
Trough #2	20B25SP	10	20N	20E	5310
Lewis River (continued)					
Lone Pine Shelter	21C26P	8	9N	7E	3800
Marble Mountain	22C5a	24	8N	5E	3200
New Muddy River	22C6P	36	8N	6E	2000
Oldman Pass	21D19P	22	6N	7E	3100
Plains of Abraham	22C1a	35	9N	5E	4400
Smith Creek Road	22C2a	29	8N	6E	2100
Spencer Meadow	21C20aP	16	8N	7E	3400
Surprise Lakes	21C13AP	14	7N	8E	4250
Table Mountain	21C24a	20	9N	9E	4200
Timbered Peak	21D18a	36	6N	6E	3000
Cowlitz River					
Cayuse Pass	21C6	15	16N	10E	5300
Chonopet Meadows	21C19	33	10N	7E	4100
Chonopetosh	21C32	28	15N	10E	2200
Pickwood Lake	21C31	21	13N	10E	2870
Pigtail Peak	21C33P	11	13N	11E	5900
Polaro Hill	21C14P	36	10N	10E	4500
Willame Creek	21C30	3	13N	8E	3250
PUGET SOUND DRAINAGE					
Nisqually River					
Ghost Forest	21C4P	23	15N	8E	4550
Longmire	21C3	29	15N	8E	2760
Paradise Park (New)	21C35	13	15N	8E	5500
Stem Glade	21C1	13	15N	8E	5050
White River					
Corral Pass	21B13	30	18N	11E	6000
Green River					
Airstrip	21B24P	18	20N	11E	1800
Charley Creek	21B25	27	21N	8E	1200
Cogur Mountain	21B42SP	21	21N	9E	3200
Grass Mountain No. 2	21B27	14	20N	8E	2900
Grass Mountain No. 3	21B28	12	20N	8E	2100
Lester Creek	21B29	36	20N	10E	4000
Lynn Lake	21B30	22	20N	8E	4000
Snowmill Ridge	21B31	5	19N	11E	4700
Snowshoe Butte	21B43SP	14	20N	11E	5000
Stompede Pass	21B10P	25	21N	11E	3860
Twin Comp	21B30	18	19N	11E	4100
Cedar River					
City Cabin	21B3	10	21N	10E	2390
Mt. Gardner	21B21P	30	22N	10E	3300
Mt. Gardner Aux.	21B22	31	22N	10E	2500
Mt. Lindsay	21B16	31	22N	9E	2500
Mt. Washington	21B15	8	22N	9E	3000
Rex River	21B17	11	21N	9E	2400
South Fork Cedar	21B6	24	21N	10E	3000
Trinkham Creek	21B20	1	21N	10E	3400
Snoqualmie River					
Alpine Meadow	21B48	31	27N	9E	3500
Oblotte Meadows	21B2P	19	22N	11E	3625
South Fork Tolt	21B18	26	26N	9E	1900
Skykomish River					
Lake Elizabeth	21B19	33	26N	10E	2900
LOWER COLUMBIA DRAINAGE					
Asotin Creek					
Spruce Springs	17C4	9	8N	40E	5700
Mill Creek					
Couse	17C3m	2	9N	40E	3370
Homestead	17C1	11	9N	40E	4030
Martin Springs (Helmets SM)	17C2M	23	9N	40E	4400
Klickitat River					
Satus Pass	20D1	21	6N	17E	4030
White Salmon River					
Cultus Creek	21C12	35	7N	8E	4000
Lewis River					
Blue Lake	21C22a	19	9N	8E	4800
Bob's Trail	21C21P	25	8N	7E	2200
Columbia Ridge	22D1a	8	5N	5E	2500
Council Pass	21C18a	24	9N	9E	4200
Divide Meadow	21C29a	21	9N	10E	5600
Grand Meadow	21C25P	28	8N	9E	3500
LEGEND					
21A7	Snow Course Only				
21A7a	Aerial Marker Only				
21A7b	Snow Course And Soil Moisture Station				
21A7c	Snow Course And Soil Moisture Station				
21A7d	Snow Course And Soil Moisture Station				
21A7e	Snow Course And Soil Moisture Station				
21A7f	Snow Course And Soil Moisture Station				
21A7g	Snow Course And Soil Moisture Station				
21A7h	Snow Course And Soil Moisture Station				
21A7i	Snow Course And Soil Moisture Station				
21A7j	Snow Course And Soil Moisture Station				
21A7k	Snow Course And Soil Moisture Station				
21A7l	Snow Course And Soil Moisture Station				
21A7m	Snow Course And Soil Moisture Station				
21A7n	Snow Course And Soil Moisture Station				
21A7o	Snow Course And Soil Moisture Station				
21A7p	Snow Course And Soil Moisture Station				
21A7q	Snow Course And Soil Moisture Station				
21A7r	Snow Course And Soil Moisture Station				
21A7s	Snow Course And Soil Moisture Station				
21A7t	Snow Course And Soil Moisture Station				
21A7u	Snow Course And Soil Moisture Station				
21A7v	Snow Course And Soil Moisture Station				
21A7w	Snow Course And Soil Moisture Station				
21A7x	Snow Course And Soil Moisture Station				
21A7y	Snow Course And Soil Moisture Station				
21A7z	Snow Course And Soil Moisture Station				

WATER SUPPLY OUTLOOK

State of Washington

February 1, 1979

* * * * *

* The water supply outlook for irrigation and power in the *
* state of Washington is again very poor for this time of year. *
* It is not nearly as bad as it was during the 1977 dry period, *
* but the outlook is not good. Snow packs vary from a low of *
* 24 percent of normal to a high of 6 percent above and the *
* average snow water equivalent throughout the state is approx- *
* imately 50 percent of normal. The low elevation snow pack is *
* much better than that which was measured in the upper reaches *
* of the watersheds but the higher elevations are generally *
* considered the water producing areas for spring and summer *
* flows. Rainfall has been below normal since September over *
* the entire Columbia Basin. This, coupled with the snow pack *
* measured as of February 1, means that the runoff expected *
* during the forthcoming runoff period will range from the high *
* fifties to the low eighties. The storms which have occurred *
* during the first part of February have been encouraging to *
* the water users, but it will take many more storm periods *
* such as we have experienced to bring the water supply up to *
* normal. *

* * * * *

SNOW COVER

The snow packs measured as of February 1 are not the lowest of record, but in many cases the second lowest. Cayuse Pass, for example, a snow course measured by the U.S.G.S., has 23 years of record for February 1 measurements. This year, it is next to the driest year. Cayuse Pass has a snow pack that is 46 percent of average, but three and a half times greater than was measured in 1977. Another interesting factor about the snow cover this year is that the water equivalent is essentially similar at both high and low elevations. Many of our measurements indicate that in a three thousand foot rise in elevation there is no increase in either snow depth or water content. The storms that put this snow cover down were uniform and the extremely cold temperatures during December and January did not allow any of this low elevation snow to melt off. The results are that the snow pack at the lower elevations generally have a much higher water equivalent as compared to normal than that at the higher elevations. A break down of some key watersheds is as follows: In the Okanogan River Drainage, 31 snow courses were measured and these have a snow pack that is 51 percent below that which was measured last year, 216 percent of that which was measured in 1977 and 37 percent of average. In the Yakima Basin, the 26 snow courses measured

show that this year's snow pack is 36 percent below last year and average, but 406 percent greater than 1977. Mill Creek Drainage in the Lower Columbia, a tributary to the Walla Walla River, has three snow courses. The snow pack in this area is excellent; 93 percent greater than was measured last year at this time, 725 percent greater than was measured in 1977, and 6 percent greater than average. This watershed is the best in the state. Conditions to the south, in the Oregon Blue Mountains, are similar. In the Puget Sound area, the Green River Watershed is measured by 11 snow courses. The snow pack here is 108 percent greater than was measured last year, 672 percent greater than was measured in 1977, but still 20 percent below normal. The Skagit River Drainage, measured by 14 snow courses, has a snow pack that is 42 percent less than was measured last year, 405 percent greater than 1977, and 41 percent below normal. On the Olympic Peninsula, the snow pack is 54 percent of average.

RESERVOIRS

Generally speaking, the reservoir situation in the state of Washington is not too bad for both power and irrigation, but there are some reservoirs that are very subnormal. Coeur d'Alene Lake, for example, is only 6 percent full as of February 1. Of the power reservoirs, Franklin D. Roosevelt Lake has more water in storage than normal for this time of year; Lake Chelan has slightly less than normal and Ross Reservoir is down about 30 percent from average. The irrigation reservoirs are mixed, but the two small reservoirs in the Okanogan area, Salmon Lake and Conconully Reservoir, are in excellent shape for this time of year. The five irrigation reservoirs in the Yakima Basin have less than normal amounts of water in storage, but with careful management adequate water should be available in spite of the poor runoff expectations.

PRECIPITATION

Rainfall over the Columbia Basin during the September-October period was above normal in the Canadian portion of the watersheds but subnormal in the Washington area. Since then, it has been subnormal over the complete Columbia Basin every month. The Upper Columbia winter precipitation has been 60 percent of normal; 56 percent in northeastern Washington; 78 percent in the southeastern portion; 51 percent along the east slopes of the Cascades. In the northwest, rainfall was 62 percent of normal and 50 percent in the southwest.

STREAMFLOW

Flows measured by the Geological Survey were all subnormal during the month of January, ranging from a low of 21 percent of normal to a high of 74 percent. Most fluctuations occur on the smaller watersheds with the larger drainages like the Columbia having the better flows, percentagewise. Forecasts made of spring and summer runoff range from 55 percent of normal for the Okanogan River near Tonasket to a high of 81 percent of normal for the Lewis River. Flows of the main stem, as summarized by the forecast of The Dalles, Oregon, are for 73 percent of normal outflows for the April-September period. The forecast for the Pend Oreille River below Box Canyon is for 70 percent of normal outflow; the Okanogan, as mentioned above, 55 percent; Methow, 65 percent; the Chelan, 73 percent; the Wenatchee, 70 percent; and the Yakima River, as measured near Parker, 67 percent. On the west side, only the Skagit and Green Rivers are forecast as of February 1. The Skagit River is expected to have a 60 percent of normal outflow during the April-September period and the Green River, 68 percent - but this for a February-September period.

STREAMFLOW FORECASTS - FEBRUARY 1979

The following summarized runoff forecasts are based principally on mountain snow-cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts. Streamflow figures for 1978 are preliminary and subject to revision.

Basin, Stream and Station	Forecast Runoff 1979	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-yr. Avg.	Fore- cast period	1978	1977	1976	15-Yr Average 63-77
<u>COLUMBIA BASIN</u>							
<u>COLUMBIA RIVER SYSTEM</u> **							
Columbia River	35900	79	Apr-Sept	44008	31562	53969	45502
at Birchbank <u>1/</u>	28700	79	Apr-July	34030	23812	38930	36353
	21000	80	Apr-June	24082	18026	25889	26194
Columbia River	51400	76	Apr-Sept	66868	41056	81878	68012
at Grand Coulee <u>1/</u>	43100	76	Apr-July	54559	32018	63543	57035
	34090	77	Apr-June	41585	25623	47065	44273
Columbia River	56200	76	Apr-Sept	72892	43415	87384	73935
bl. Rock Island Dam <u>1/</u>	47600	76	Apr-July	60163	34253	68404	62462
	37300	77	Apr-June	46242	27563	50696	48489
Columbia River	75000	73	Apr-Sept	101055	54092	120643	103493
At The Dalles, OR <u>1/</u>	64200	73	Apr-July	84815	42940	97836	88519
	52700	74	Apr-June	67353	35524	77318	71237
<u>PEND OREILLE RIVER SYSTEM</u> **							
Pend Oreille River	11200	70	Apr-Sept	15581	4130	16946	15950
bl. Box Canyon	10300	70	Apr-July	14080	2715	15271	14690
	8350	71	Apr-June	11750	2261	11814	11760
<u>KETTLE RIVER SYSTEM</u>							
Kettle River	1460	79	Apr-Sept	-	1145	2434	1846
nr. Laurier	1385	79	Apr-July	-	1105	2112	1754
	1251	79	Apr-June	1629	1037	1826	1588
Colville River	104	78	Apr-Sept	-	26	123	134
at Kettle Falls	94	76	Apr-July	-	22	106	123
	88	77	Apr-June	-	20	98	115

1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Reservoir and pumpage at F. D. Roosevelt Lake.

** Forecasts made by National Weather Service, River Forecast Center, Portland, OR.

Basin, Stream and Station	Forecast Runoff 1979	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast Period	1978	1977	1976	15-Yr 63-77
<u>SPOKANE RIVER SYSTEM ***</u>							
Spokane River	2100	72	Apr-Sept	2427	-	3418	2910
at Post Falls, ID <u>2/</u>	2000	73	Apr-July	2330	-	3275	2733
	1950	75	Apr-June	2199	-	3033	2600
<u>OKANOGAN RIVER SYSTEM **</u>							
Similkameen River	850	56	Apr-Sept	1474	645	1944	1517
nr. Nighthawk	810	57	Apr-July	1334	605	1720	1417
	690	58	Apr-June	1138	547	1347	1192
Okanogan River							
nr. Tonasket	940	55	Apr-Sept	1693	708	2185	1719
	870	56	Apr-July	1509	644	1836	1565
	750	57	Apr-June	1292	583	1382	1305
<u>METHOW RIVER SYSTEM **</u>							
Methow River	655	65	Apr-Sept		280	1205	1011
nr. Pateros	615	66	Apr-July		246	1047	937
	500	63	Apr-June		217	802	791
<u>CHELAN RIVER SYSTEM</u>							
Chelan River	900	73	Apr-Sept	1804	599	1466	1237
at Chelan <u>3/</u>	800	74	Apr-July	1618	481	1184	1080
	640	77	Apr-June	1307	403	836	834
Stehekin River	665	74	Apr-Sept		494	1010	904
at Stehekin	580	76	Apr-July		382	787	764
	440	76	Apr-June		311	523	578
Entiat	145	60	Apr-Sept		95	310	241
nr. Ardenvoir	135	61	Apr-July		81	266	218
	115	65	Apr-June		70	190	174
<u>WENATCHEE RIVER SYSTEM</u>							
Wenatchee River	900	69	Apr-Sept		633	1510	1297
at Plain	830	72	Apr-July		542	1263	1156
	680	75	Apr-June		479	891	903
Wenatchee River	1230	70	Apr-Sept		839	2074	1767
at Peshastin	1140	72	Apr-July		730	1746	1587
	930	74	Apr-June		753	1238	1250
Stemilt Basin	105*	74	May-Sept			144*	138*
nr. Wenatchee							
Icicle Creek	275	74	Apr-Sept				371
nr. Leavenworth	255	75	Apr-July				342
	210	76	Apr-June				279

* Thousands of Miners' Inches.

** Forecasts made by National Weather Service, River Forecast Center, Portland, OR.

*** Forecasts made by Jack A. Wilson, Soil Conservation Service, Boise, Idaho.

2/ Observed flow corrected for storage in Coeur d'Alene Lake and diversions by Spokane Valley Farms Company and Rathdrum Prairie Canals.

3/ Observed flow corrected for storage in Lake Chelan.

Basin, Stream and Station	Forecast Runoff 1979	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast period	1978	1977	1976	15-Yr. Average 63-77
YAKIMA RIVER SYSTEM							
Yakima River	115	80	Apr-Sept	106	78	157	145
nr. Martin <u>4/</u>	105	79	Apr-July	92	67	141	133
	95	83	Apr-June	83	67	117	114
Yakima River	805	76	Apr-Sept	911	493	1091	1062
at Cle Elum <u>5/</u>	740	76	Apr-July	726	416	980	970
	665	79	Apr-June	636	379	807	838
Yakima River	1450	67	Apr-Sept	2059	802	2521	2168
nr. Parker <u>6/</u>	1400	72	Apr-July	1691	657	2205	1954
	1255	74	Apr-June	1487	611	1810	1693
Kachess River	95	74	Apr-Sept	101	61	142	126
nr. Easton <u>7/</u>	90	76	Apr-July	95	55	131	119
	85	82	Apr-June	88	53	109	104
Cle Elum River	370	77	Apr-Sept	411	250	561	479
nr. Roslyn <u>8/</u>	345	79	Apr-July	369	215	484	435
	300	84	Apr-June	314	193	370	358
Bumping River	90	62	Apr-Sept	117	63	175	146
nr. Nile <u>9/</u>	85	64	Apr-July	105	55	152	133
	75	71	Apr-June	89	51	109	106
American River	85	67	Apr-Sept		50	132	127
nr. Nile	80	69	Apr-July		44	116	116
	65	68	Apr-June		39	86	95
Tieton River	155	62	Apr-Sept	238	128	302	252
at Tieton Dam <u>10/</u>	130	61	Apr-July	196	92	242	212
	105	62	Apr-June	156	76	179	168
Naches River	535	60	Apr-Sept	760	327	1046	890
nr. Naches <u>11/</u>	490	61	Apr-July	657	275	908	802
	430	63	Apr-June	564	245	717	678
Ahtanum Creek	28	60	Apr-Sept		8	51	47
nr. Tampico <u>12/</u>	26	62	Apr-July		7	45	42
	23	62	Apr-June		6	37	37

4/ Observed flow corrected for storage in Lake Keechelus.

5/ Observed flow corrected for storage in Keechelus, Kachess, and Cle Elum Lakes and diversion by Kittitas Canal.

6/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes and diversions by Roza, Union Gap, New Reservation, Old Reservation, and Sunnyside Canals.

7/ Observed flow corrected for storage in Lake Kachess.

8/ Observed flow corrected for storage in Lake Cle Elum.

9/ Observed flow corrected for storage in Bumping Lake.

10/ Observed flow corrected for storage in Rimrock Lake.

11/ Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals, and City of Yakima.

12/ Observed flow of North and South Forks (Combined).

Basin, Stream and Station	Forecast Runoff 1979	Seasonal Streamflow in Thousands of Acre-Feet					
		15-Yr. Avg.	Fore- cast Period	1978	1977	1976	15-Yr.
							Average 63-77
<u>LOWER COLUMBIA RIVER SYSTEM</u>							
Mill Creek	Station		Apr-Sept				41
nr. Walla Walla	has been		Apr-July				36
	discontinued		Apr-July				32
Lewis River	1070	81	Apr-Sept	1134	1030	1285	1301
at Ariel <u>13/</u>	920	81	Apr-July	946	832	1130	1131
	825	83	Apr-June	850	767	990	995
Cowlitz River **	1560	73	Apr-Sept		1570	1296	2125
bl. Mayfield Dam	1360	73	Apr-July		1293	1063	1853
	1200	77	Apr-June		1158	1584	1552
Cowlitz River **	2190	79	Apr-Sept	2310	2157	2924	2767
at Castle Rock <u>14/</u>	1920	80	Apr-July	1830	1754	2493	2401
	1650	81	Apr-June	1610	1631	2063	2028
<u>OLYMPIC PENINSULA</u>							
<u>DUNGENESS RIVER SYSTEM</u>							
Dungeness River	130	81	Apr-Sept		97	160	160
nr. Sequim	105	81	Apr-July		75	128	130
	80	83	Apr-June		61	91	96
<u>PUGET SOUND</u>							
<u>SKAGIT RIVER SYSTEM</u>							
Skagit River	1675	66	Feb-Aug		1155	3003	2532
at Newhalem <u>15/</u>	1410	60	Apr-Sept		728	2943	2356
	1270	64	Apr-July		535	2322	1972
	980	66	Apr-June		429	1595	1485
<u>13/</u>	Observed flow corrected for storage in Lake Merwin, Yale and Swift Reservoirs.						
<u>14/</u>	Observed flow corrected for storage in Mayfield Reservoir.						
<u>15/</u>	Observed flow corrected for storage in Diablo, Ross and Gorge Reservoirs.						
**	Forecasts made by National Weather Service, River Forecast Center, Portland, OR.						

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of Washington stream basins presents the water content of the snow about February 1, 1979, as percent of the same date in 1978 and 1977 and average of record.

average of record.

Tributary Basin	No. of Courses Average	1979 Snow Water Expressed as percent of	1978	1977	1963-77 Avg.
<u>UPPER COLUMBIA BASIN</u>					
Pend Oreille	11		44	198	54
Kettle	11		45	143	52
Colville	5		60	538	70
Spokane	4		107	288	99
Okanogan	31		49	216	37
Methow	5		17	508	24
Chelan	5		47	268	46
Entiat	11		40	525	42
Wenatchee	9		61	488	68
Yakima	26		64	506	64
Ahtanum	2		50	556	70
<u>LOWER COLUMBIA BASIN</u>					
Mill Creek	3		193	825	106
Klickitat	1		54	-	42
Cowlitz	2		66	343	55
<u>PUGET SOUND</u>					
White	3		56	480	48
Green	11		208	772	80
Snoqualmie	1		99	2862	66
Skykomish	2		61	575	65
Skagit	14		58	505	59
Nooksack	2		38	242	52
<u>OLYMPIC PENINSULA</u>					
Elwha	1		86	-	48
Dungeness	1		90	-	60

RESERVOIR STORAGE - 1000 Acre Feet

BASIN OR STREAM	RESERVOIR	USABLE 1/ CAPACITY	Measured (February)			
		1979	1978	1977	Normal*	
COLUMBIA						
Spokane	Coeur d'Alene Lake	225.1	13.7	134.7	21.7	145.3
Columbia	Franklin D. Roosevelt Lake	5232.0	4228.4	3149.2	4172.0	3698.2
Columbia	Banks Lake	714.9	690.8	714.9	704.2	619.4
Okanogan	Conconully Reservoir	13.0	9.7	3.0	8.0	6.2
Okanogan	Salmon Lake	10.5	10.5	6.0	9.6	7.6
Chelan	Lake Chelan	676.1	276.5	274.6	258.1	294.2
YAKIMA						
Yakima	Keechelus Lake	157.8	66.2	130.7	65.6	97.6
Kachess	Kachess Lake	239.0	178.0	178.5	192.4	173.4
Cle Elum	Lake Cle Elum	436.9	65.6	229.4	382.0	259.7
Bumping	Bumping Lake	33.7	3.7	32.8	4.4	7.8
Tieton	Rimrock Lake	198.0	138.7	167.4	120.1	118.0
PUGET SOUND						
Skagit	Ross Reservoir	1404.1	760.5	1001.8	769.5	1012.6
Skagit	Diablo Reservoir	90.6	86.8	85.2	83.3	84.2
Skagit	Gorge Reservoir	9.8	8.3	8.2	8.4	7.9

1/ Based on Active Storage

* 15-year Average 1963-1977

SOIL MOISTURE - FEBRUARY

Drainage Basin and Station	Number	Elev.	Profile Depth	Inches Total Capacity	Soil Moisture Content		
					Inches as of Feb. 1		
					1979	1978	1977
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	-	-	-
Trout Creek	3-M	3600	48	7.3	Late	3.5	3.3
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	-	-	-
Lake Cle Elum	21B14M	2200	48	12.8	-	-	-
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	-	8.0	-
Helmers	17C2M	4400	48	12.0	8.7	9.8	-
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	6.9	9.9	6.8

FALL SOIL MOISTURE

Drainage Basin and Station	Number	Elev.	Profile Depth	Inches Total Capacity	Soil Moisture Content		
					(Inches) as of Oct. 1		
					1978	1977	1976
<u>OKANOGAN</u>							
Salmon Meadows	19A02M	4500	48	5.4	-	-	3.4
Trout Creek	3-M	3600	48	7.3	3.7	3.2	3.4
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	-	-	-
Lake Cle Elum	21B14M	2200	48	12.8	-	-	-
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	5.9	-	-
Helmers	17C2M	4400	48	12.0	8.2	-	-
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	10.3	6.6	-

PRECIPITATION 1/

Division Average Observations and Departures

Drainage Divisions	FALL		WINTER	
	Sept-Oct Observed	1978 <u>2/</u> Departure	Nov-Dec 1978 Observed	Jan 1979 <u>2/</u> Departure
Columbia in Canada	6.29	+1.27	6.62	-4.51
Pend Oreille - Spokane	2.09	-1.95	6.87	-5.31
Northeastern Washington	1.74	-0.73	3.76	-2.95
Southeastern Washington	1.22	-1.29	5.50	-1.56
Central Washington	0.60	-0.37	1.90	-1.85
North Central Washington	2.22	+0.63	2.53	-2.31
Northwest Slope Cascades	9.89	-3.32	23.46	-14.47
Southwest Slope Cascades	6.18	-2.50	14.58	-14.33

Northeastern Washington - Lower Spokane, Colville, Sanpoil and Lower Kettle Drainages.

Southeastern Washington - Touchet, Tucannon and Palouse Drainages.

Central Washington - Yakima, Wenatchee and Chelan Drainages.

North Central Washington - Methow and Okanogan Drainages.

Northwest Slope Cascades - Puget Sound Drainages.

Southwest Slope Cascades - Lower Columbia Drainages.

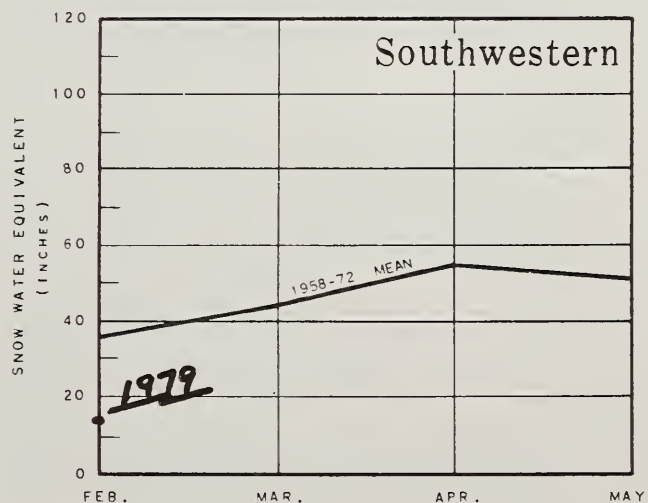
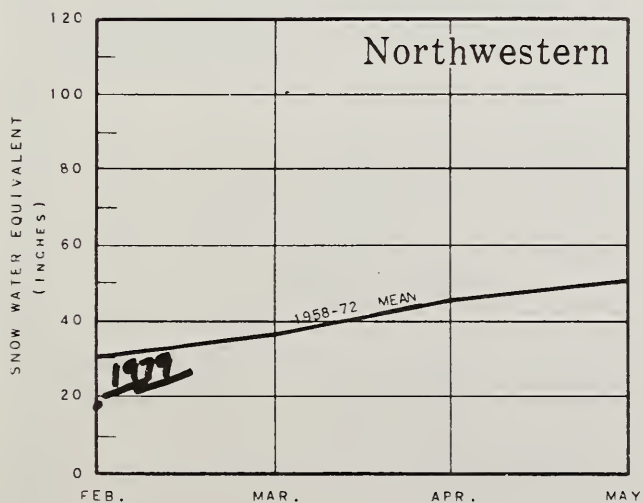
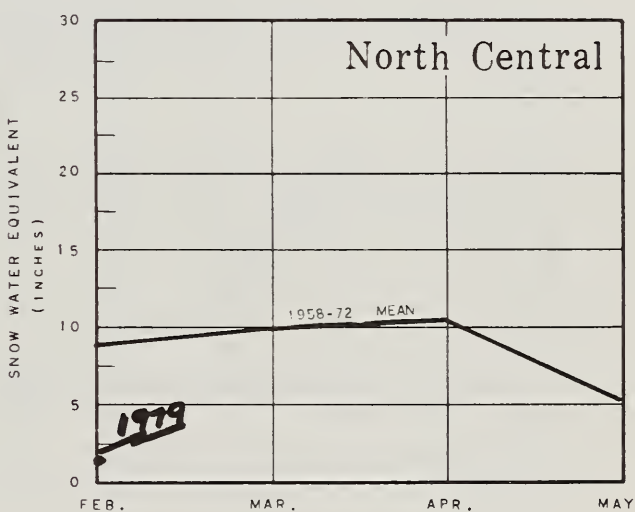
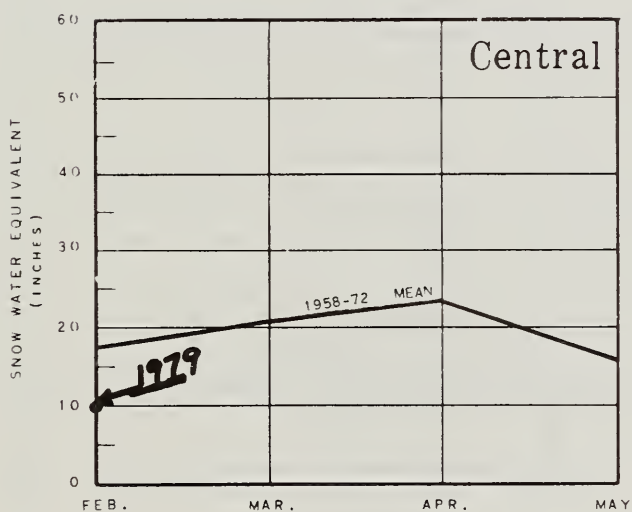
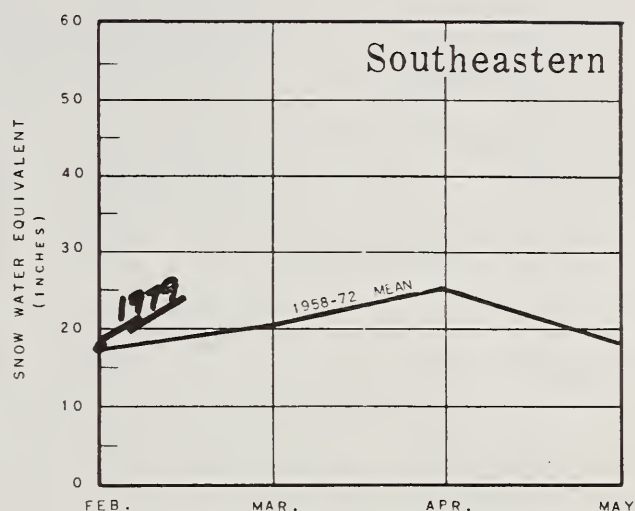
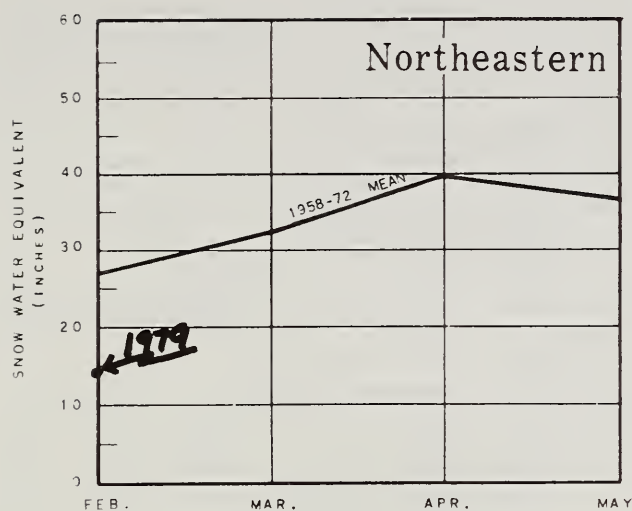
1/ - Preliminary analysis by National Weather Service from data furnished by Meteorological Services of Canada and the National Weather Service.

2/ - Departure from 15-year (1958-72) drainage division average.

WASHINGTON SNOW COVER

1979

DRAINAGE AREAS

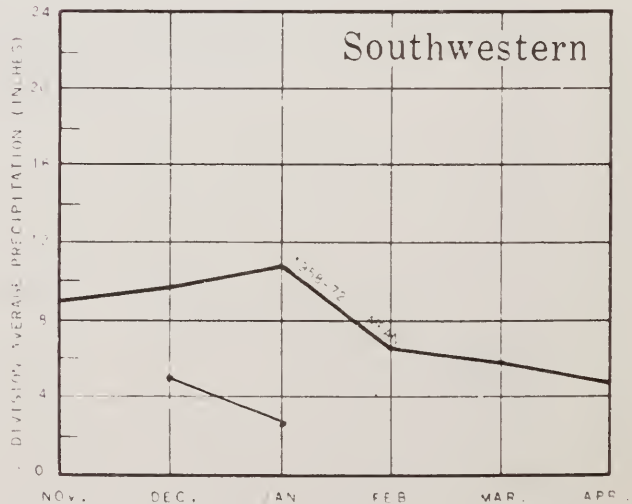
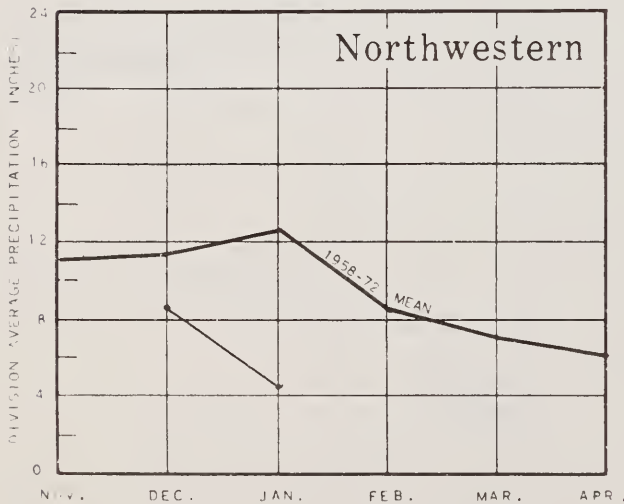
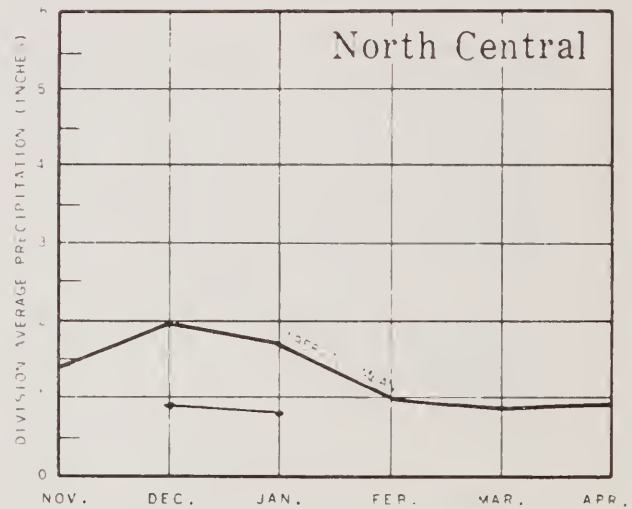
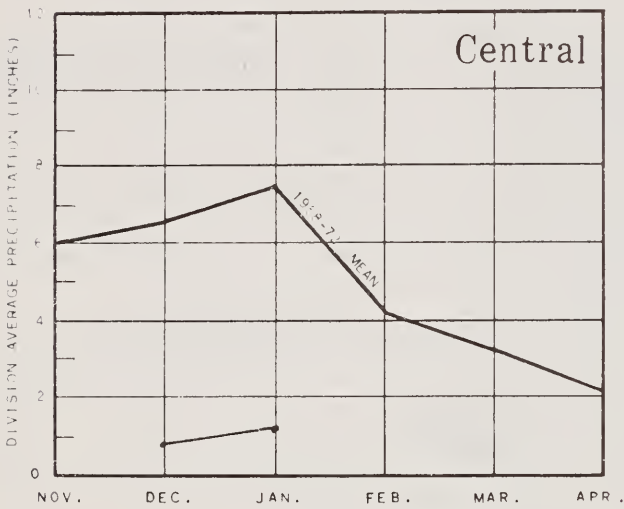
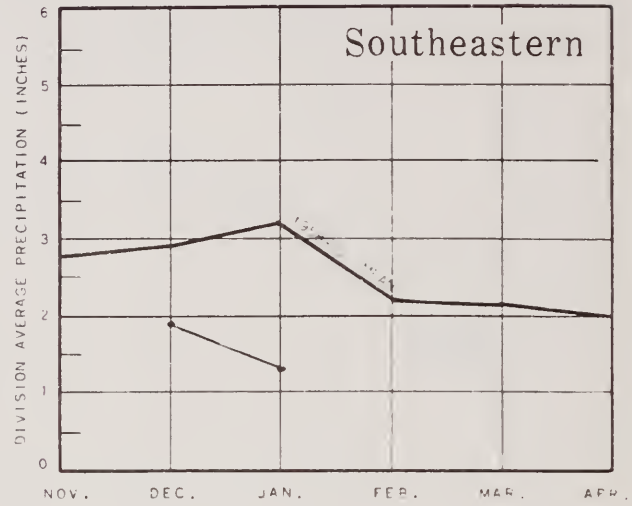
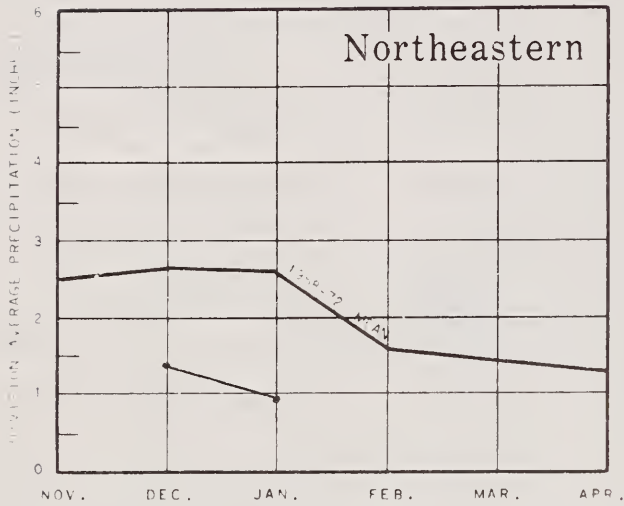


Selected Snow Survey Courses by Soil Conservation Service

WASHINGTON VALLEY PRECIPITATION

1979

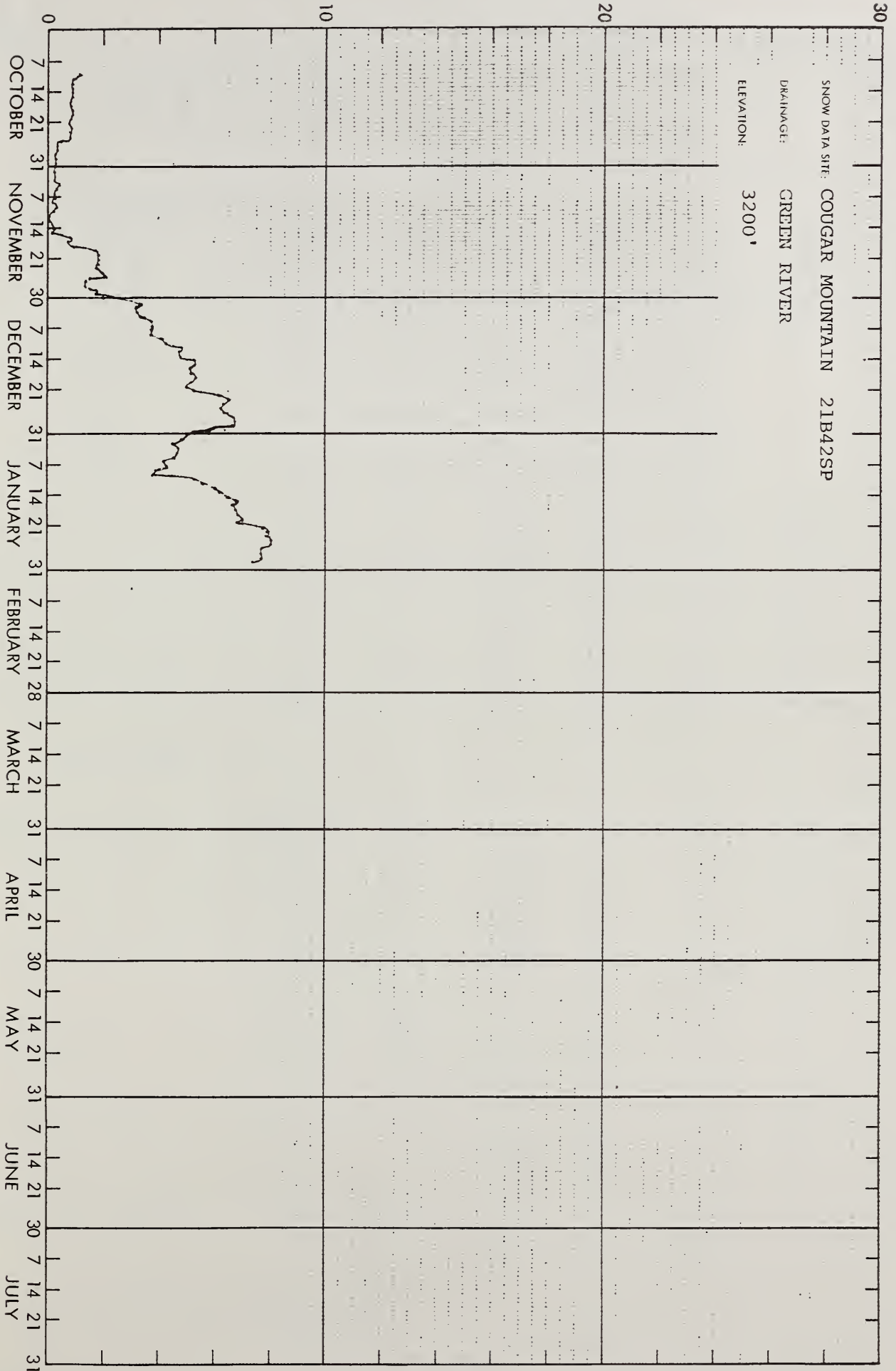
DRAINAGE AREAS



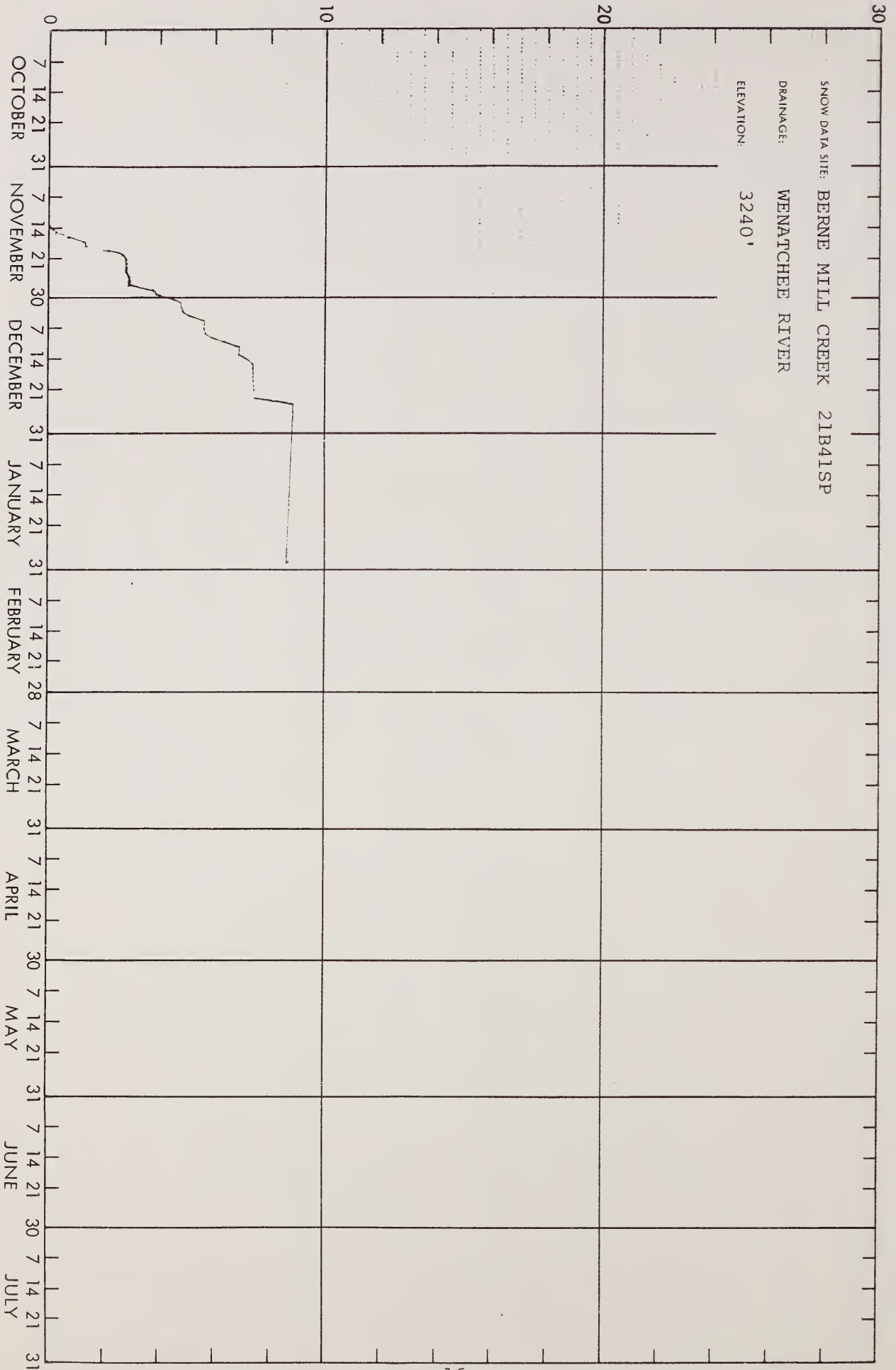
Preliminary Analysis by National Weather Service

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INCHES OF WATER IN SNOWPACK



INCHES OF WATER IN SNOWPACK



SNOW DATA TO FEBRUARY 1, 1979 - APPENDIX 1

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

U P P E R C O L U M B I A D R A I N A G EPEND OREILLE RIVER

Benton Meadow	16A02	2344	12/29	14	1.7	5.4	2.7
			1/29	22	3.2	6.3	5.2
Benton Spring	16A03	4900	12/29	22	3.1	12.1	7.5
			1/29	30	6.2	15.8	13.2
Chewelah	17A04	4925	1/28	25	6.5	13.2	11.5
Heart Lake Trail	14C10	4800	12/28	49	12.2	-	9.7
			2/1	48	14.5	-	18.9
Hoodoo Basin	15C10	6000	12/28	74	20.2	-	22.2
			2/1	73	25.4	-	39.7
Hoodoo Creek	15C01	5900	12/28	69	17.9	-	19.8
			2/1	67	22.5	-	37.2
Lookout	15B02	5250	12/31	41	11.2	22.0	13.8
			1/30	51	14.4	27.5	25.6
Nelson	19-Can	3050	12/29	18	3.6	8.9	7.6*
			1/31	22	4.6	11.7	11.2*
Schweitzer Bowl	16A06	4500	1/2	25	6.8	18.7	13.8
			1/30	33	9.5	25.5	23.1
Schweitzer Ridge	16A05	6100	1/2	39	11.9	26.2	21.3
			1/30	50	15.6	39.4	34.2
Winchester Creek	17A03	2970	1/29	24	3.9	8.0	8.6

KETTLE RIVER

Barnes Creek	90-Can	5300	1/26	44	11.5	14.7	14.1*
Big White Mtn.	154-Can	5500	2/2	43	9.5	14.6	14.1*
Boulder Road	18A02	1450	12/28	9	1.0	2.4	2.3
			1/29	15	2.4	4.8	3.9
Butte Creek	18A03	4070	12/28	12	2.0	5.4	4.0
			1/29	16	2.7	8.6	6.9
Cabin Creek	18A08	3170	12/28	10	1.3	4.2	3.7
			1/29	15	2.5	6.8	9.3
Carmi	126-Can	4100	2/2	20	2.6	6.6	5.4*
Farron # 1	17-Can	4000	1/30	19	3.5	10.8	9.6*
Farron # 2	243-Can	4000	1/30	20	4.1	12.3	9.1*
Goat Creek	18A04	3595	12/28	10	1.5	4.4	3.5
			1/29	14	2.5	7.3	5.6
Monashee Pass	48A-Can	4500	1/2	32	7.2	10.1	7.4*
			1/26	33	8.5	11.4	9.6*
Snow Caps Creek	18A05	2150	12/28	10	1.8	2.4	2.5
			1/29	14	2.5	5.3	4.1
Snow Caps Trail	18A06	2720	12/28	9	1.5	3.1	2.9
			1/29	14	2.4	5.9	4.8

Average based on 1963-77 Average

* Average for years of record

SNOW DATA TO FEBRUARY 1, 1979 - APPENDIX 2

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

KETTLE RIVER (Cont.)

Summit G.S.	18A07	4600	12/27	10	1.7	4.5	3.5
			1/29	14	2.7	5.7	5.9
Trapping Creek Lower 166-Can		3050	2/2	20	3.2	5.0	4.4*
Trapping Creek Upper 165-Can		4450	2/2	31	6.1	8.0	7.4*

COLVILLE RIVER

Baird	17A06	3215	1/28	23	4.4	8.6	5.5
Carlson	18A09	2885	1/28	19	4.0	4.1	3.7
Chewelah	17A04	4925	1/28	25	6.5	13.2	11.5
Stranger Mourtain	17A05	5990	1/28	23	5.4	10.3	9.6
Togo	18A10	3370	1/28	21	4.2	8.4	8.6

SPOKANE RIVER

Above Burke	15B08	4100	12/29	43	11.0	10.5	-
			1/30	51	14.2	16.1	-
4th of July Summit	16B03	3100	1/2	26	6.3	2.9	3.3
			1/30	39	9.6	7.1	7.3
Lookout	15B02	5250	12/31	41	11.2	22.0	13.8
			1/30	51	14.4	27.5	25.6
Sherwin	16C01	3200	1/2	32	8.0	5.8	-
			1/30	42	11.7	7.6	10.7

OKANOGAN RIVER

Aberdeen Lake	6A-Can	4300	1/30	24	4.5	7.6	5.1*
Blackwall Peak	100-Can	6250	1/30	46	11.7	25.4	24.7*
Brenda Mine	193-Can	4800	12/28	28	6.2	10.0	7.2*
			1/29	32	7.7	11.9	10.0*
Brookmere	27-Can	3200	1/3	17	3.6	5.1	3.1*
			1/29	22	4.3	7.9	7.1*
Carrs Landing Upper	168-Can	3200	1/28	18	3.7	5.7	3.9*
Enderby	130-Can	6250	1/31	48	13.7	29.6	25.6
Hamilton Hill	107-Can	4900	1/30	31	7.9	15.2	10.6*
Harts Pass	20A05A	6500	1/30	59	18.4	37.1	32.7
Isontok Lake	152-Can	6300	12/31	17	3.5	6.9	4.2*
			1/30	24	5.5	8.5	6.4*
Lost Horse Mtn.	105-Can	6300	1/31	14	3.6	7.0	6.9*
Loup Loup	19A07	4650	1/30	11	1.5	8.5	7.4
McCulloch	4-Can	4200	1/1	22	3.7	5.0	3.3*
			1/28	28	4.1	6.5	5.0*
Missezula Mtn.	106-Can	5100	1/28	25	5.5	10.2	7.0*
Mission Creek	5A-Can	6000	12/29	37	8.5	11.9	9.5*
			2/1	42	10.6	15.3	13.9*
Monashee Pass	48A-Can	4500	1/2	32	7.2	10.1	7.4*
			1/26	33	8.5	11.4	9.6*

Average based on 1963-77 Average

* Average based on years of record 18

SNOW DATA TO FEBRUARY 1, 1979 - APPENDIX 3

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

OKANOGAN RIVER (Cont.)

Mount Kobau	156-Can	5950	1/4	10	1.6	5.9	2.3*
			1/31	14	2.4	7.7	10.2*
Muckamuck +	19A09a	6390	1/28	20	3.2	15.1	11.4
Mutton Creek No. 1	19A01	5700	1/30	12	1.7	11.1	10.8
Mutton Creek No. 2 SP	19A11SP	6000	1/30	-	1.0	10.1	New
New Copper Mtn.	46A-Can	4300	1/29	18	2.4	4.7	5.3*
New Penticton Res.#2	183-Can	5225	1/30	24	4.4	6.4	7.2*
Oyama Lake	203-Can	4400	1/28	21	5.6	7.3	5.7*
Paysayten +	20A28a	4300	1/28	28	4.5	12.5	14.2
Postill Lake	55-Can	4500	1/31	27	5.8	6.9	5.9*
Rusty Creek	19A03	4000	1/31	10	1.6	6.6	5.6
Salmon Meadows	19A02	4500	1/30	11	1.4	7.3	7.5
Silver Star Mountain	99-Can	6050	1/1	36	8.8	20.4	14.7*
			1/28	44	11.2	24.8	19.6*
Starvation Mountain +	19A10a	6750	1/28	24	3.8	-	13.8
Summerland Reservoir	3A-Can	4200	12/30	22	4.7	7.0	5.0*
			1/27	29	6.5	9.4	7.8*
Touts Coulee	19A06	2845	1/29	7	1.0	3.1	3.1
Trout Creek	3-Can	4700	1/29	26	5.6	7.4	5.2*
Vaseux Creek	233-Can	4600	12/30	13	1.7	3.0	2.6*
			1/27	17	2.6	5.0	5.1*
White Rocks Mtn.	70-Can	6000	1/2	36	8.5	17.6	17.6*
			1/30	41	12.8	21.8	19.1*

METHOW RIVER

Harts Pass	20A05A	6500	1/30	59	18.4	37.1	32.7
Loup Loup	19A07	4650	1/30	11	1.5	8.5	7.4
Mutton Creek No. 1	19A01	5700	1/30	12	1.7	11.1	10.8
Mutton Creek #2 SP	19A11SP	6000	1/30	-	1.0	10.1	New
Rusty Creek	19A03	4000	1/31	10	1.6	6.6	5.6
Salmon Meadows	19A02	4500	1/30	11	1.4	7.3	7.5
War Creek Pass +	20A31a	6500	1/28	69	13.8	-	36.2

CHELAN LAKE BASIN

Cloudy Pass +	20A22a	6500	1/28	67	20.1	35.9	30.0
Little Meadows +	20A24a	5275	1/28	68	20.4	42.6	30.7
Lyman Lake +	20A23A	5900	1/28	84	25.2	53.3	39.7
Park Creek Flat +	20A13a	2220	1/28	45	13.5	-	26.8
Park Creek Ridge	20A12A	4600	1/28	67	20.1	44.8	36.9
Rainy Pass	20A09	4780	1/30	51	15.4	37.6	30.9
War Creek Pass +	20A31a	6500	1/28	69	13.8	-	36.2

Average based on 1963-77 average

* Average for years of record

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO FEBRUARY 1, 1979 - APPENDIX 4

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average †#

ENTIAT RIVER

Blue Creek G.S. +	20B28a	5425	1/31	62	17.4	34.0	New
Brief	20B19	1600	1/27	21	5.1	9.1	7.0
Entiat Meadows +	20A33a	4540	1/31	30	8.4	31.9	40.0
Entiat River Trail +	20A34a	3325	1/31	36	7.9	27.5	20.0
Four Mile Ridge +	20B27a	6800	1/31	36	10.1	27.0	30.9
Fox Camp +	20A36a	6510	1/31	56	15.7	41.0	44.7
Pope Ridge	20B20	3450	2/2	31	6.8	20.2	15.2
Pugh Ridge	20A32a	6725	1/31	63	17.6	26.2	29.5
Shady Pass	20A37	6200	2/1	37	10.4	30.0	20.7
Snow Brushy +	20A35a	3910	1/31	45	9.9	36.2	30.5
Tommy Creek +	20B21a	4900	1/31	30	8.4	20.5	22.5

WENATCHEE RIVER

Berne-Mill Creek	21B23	3170	11/28	15	3.8	8.9	4.5
			12/13	32	8.4	16.8	7.8
			12/27	41	12.0	17.2	11.0
			1/11	50	14.6	24.4	16.2
			1/29	54	14.5	27.2	21.5
Berne-Mill Creek New	21B41SP	3240	11/28	15	4.2	8.6	4.5
			12/27	39	12.1	12.4	11.6
			1/11	55	17.2	-	-
			1/29	53	14.4	20.8	20.0
Blewett Pass No.2	20B02	4270	12/20	24	5.9	8.5	6.3
			1/30	33	9.1	14.3	13.2
Chiwaukum G.S.	20B16	1810	11/28	9	2.0	3.4	1.5
			12/13	17	3.4	6.4	3.2
			12/27	19	4.9	7.1	4.8
			1/11	28	5.4	8.9	7.0
			1/29	26	5.9	9.6	9.5
Lake Wenatchee	20B05	1970	11/28	15	3.0	7.2	1.6
			12/13	22	4.6	11.9	3.6
			12/27	21	6.9	12.4	5.9
			1/11	31	8.0	15.5	9.5
			1/29	33	9.6	15.4	11.8
Leavenworth R.S.	20B17	1127	11/1	0	0.0	0.0	0.0
			11/13	0	0.0	0.0	0.1
			11/27	6	1.3	0.5	0.7
			12/12	11	2.3	2.0	1.7
			12/27	12	3.1	2.2	3.1
			1/11	18	4.0	4.9	4.8
			1/26	16	3.7	5.8	5.9
Lyman Lake +	20A23A	5900	1/28	84	25.2	53.3	39.7

Average based on 1963-77 Average

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO FEBRUARY 1, 1979 - APPENDIX 5

SNOW

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #
<u>WENATCHEE RIVER (Cont.)</u>							
Merritt	20B18	2140	11/28	16	3.0	5.8	2.3
			12/13	23	5.3	12.0	4.8
			12/27	24	7.0	12.8	7.1
			1/11	34	8.9	16.6	11.2
			1/29	37	9.9	17.0	14.0
Stevens Pass	21B01	4070	11/14	0	0.0	10.5	3.6
			11/28	20	5.1	15.9	8.1
			12/13	45	11.8	29.0	14.7
			12/27	65	19.7	29.2	21.9
			1/11	71	23.0	37.7	30.1
Stevens Pass Sand Shed	21B45	3700	1/29	80	23.7	39.5	37.3
			11/28	13	3.7	11.0	6.4
			12/13	35	9.7	19.5	11.2
			12/27	51	15.3	21.9	15.3
			1/29	60	17.8	28.9	26.8
<u>COLOCKUM CREEK</u>							
Colockum Creek Upper	20B22	5300	1/29	22	3.7	12.1	11.7
Colockum Creek Lower	20B23	4300	1/29	22	4.2	9.8	8.5
Trough # 2	20B25SP	5310	1/29	22	4.5	13.5	New
<u>SQUILCHUCK CREEK</u>							
Beehive Springs	20B03	4400	1/30	23	4.3	9.6	6.7
Scout-A-Vista	20B04	3400	1/30	24	4.3	9.7	6.9
<u>STEMILT CREEK</u>							
Jump-Off	20B08	4450	1/29	24	5.4	10.2	7.1
Stemilt Slide	20B06	5000	1/29	28	6.0	14.3	11.2
Upper Wheeler	20B07	4400	1/29	24	5.4	10.6	8.4
<u>YAKIMA RIVER</u>							
Ahtanum R.S.	21C11	3100	1/2	10	2.5	1.9	3.2
			1/26	18	4.6	8.6	6.1
Blewett Pass No. 2	20B02	4270	12/20	24	5.9	8.5	6.5
			1/30	33	9.1	14.3	13.2
Bumping Lake Old	21C08	3450	12/28	15	3.2	7.2	6.5
			1/16	25	5.1	8.1	10.4
			1/29	22	4.8	10.1	13.3
Bumping Lake New	21C36	3400	11/30	5	1.4	-	3.7
			12/28	18	4.4	9.8	8.3
			1/16	29	5.9	11.9	14.2
			1/29	27	5.2	12.8	16.8

Average based on 1963-77 average

SNOW DATA TO FEBRUARY 1, 1979 - APPENDIX 6

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

YAKIMA RIVER (Cont.)

Cayuse Pass	21C06	5300	12/27	70	21.8	39.1	34.4
			1/29	81	27.1	52.7	59.5
Colockum Pass	20B09	5370	1/26	25	6.5	18.4	11.8
Cooke Creek	20B10	4123	1/26	11	2.2	0.0	5.3
Corral Pass	21B13	6000	1/29	59	19.1	26.8	-
Green Lake	21C10	6000	1/26	38	12.8	27.7	19.4
Grouse Camp	20B11	5385	1/25	26	7.8	16.7	12.3
High Creek	20B12	2930	1/25	17	3.4	5.1	5.5
Joe Lake +	21B46a	4624	2/1	96	35.5	49.2	41.8
Lake Cle Elum	21B14M	2200	12/2	10	2.3	4.0	1.1
			12/12	16	3.3	3.9	2.4
			12/28	13	3.8	5.4	3.9
			1/10	24	4.8	5.6	7.1
			1/31	23	5.3	6.2	8.5
Lemah Creek +	21B47a	3327	2/1	69	25.5	34.8	31.0
Manashtash	20C01	3935	1/25	14	2.9	6.9	4.3
Morse Lake	21C17	5400	1/30	61	19.3	39.9	38.9
Nanum	20B13	3875	1/25	18	3.9	6.8	7.4
Olallie Meadows	21B02	3625	1/29	65	22.8	23.2	34.8
Satus Pass	20D01	4030	1/29	12	3.7	6.9	8.9
Stampede Pass SP	21B10	3860	11/30	31	5.3	13.0	7.5
			12/14	43	11.1	22.5	14.0
			1/1	49	22.3	27.6	17.4
			1/15	64	21.9	33.5	24.8
			2/1	68	23.4	34.0	31.5
Trail Creek	20B14	3360	1/26	13	2.6	4.1	2.9
Tunnel Avenue	21B08	2450	12/1	14	3.8	3.4	3.1
			12/14	21	5.8	7.4	5.8
			12/28	24	6.7	9.5	8.4
			1/11	33	8.7	11.7	13.7
			1/30	38	10.0	12.3	17.8
Van Epps Pass +	20B26a	5925	2/1	98	36.2	44.0	39.4
Walters Flat	20B15	3360	1/25	17	3.6	6.0	6.5
Waptus Lake +	21B49a	3024	2/1	72	26.6	32.4	32.2
White Pass (E.Side)	21C28	4500	11/29	11	3.3	-	4.6
			12/18	25	5.4	-	7.4
			1/15	38	8.7	12.0	14.4
			1/30	36	11.7	14.2	18.4

AHTANUM CREEK

Ahtanum R.S.	21C11	3100	1/2	10	2.5	1.9	3.2
			1/26	18	4.6	8.6	6.1
Green Lake	21C10	6000	1/26	38	12.8	27.7	19.4

Average based on 1963-77 average

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO FEBRUARY 1, 1979 - APPENDIX 7

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

LOWER COLUMBIA DRAINAGEASOTIN CREEK

Spruce Springs	17C04	5700	1/29	49	13.8	12.7	18.2
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MILL CREEK

Homestead	17C01	4030	1/24	36	8.1	3.8	7.2
Martin Springs	17C02	4400	1/24	43	11.0	4.6	10.3
Tollgate	18D03M	5070	1/26	56	17.5	13.7	17.7

KLICKITAT RIVER

Satus Pass	20D01	4030	1/29	12	3.7	6.9	8.9
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COWLITZ RIVER

Cayuse Pass	21C06	5300	12/27	70	21.8	39.1	34.4
			1/29	81	27.1	52.7	59.5
White Pass (E. Side)	21C28	4500	11/29	11	3.3	-	4.6
			12/18	25	5.4	-	7.4
			1/15	38	8.7	12.0	14.4
			1/30	36	11.7	14.2	18.4

PUGET SOUND DRAINAGEWHITE RIVER

Cayuse Pass	21C06	5300	12/27	70	21.8	39.1	34.4
			1/29	81	27.1	52.7	59.5
Corral Pass	21B13	6000	1/29	59	19.1	26.8	-
Morse Lake	21C17	5400	1/30	61	19.3	39.9	38.9

GREEN RIVER

Airstrip	21B24	1800	11/27	4	0.8	0.0	0.6
			1/2	6	1.2	0.4	1.8
			1/29	15	3.7	0.0	5.6
Charley Creek	21B25	1200	11/27	0	0.0	0.0	0.1
			1/2	0	0.0	0.0	1.5
			1/29	8	2.2	0.0	1.3
Cougar Mountain	21B42SP	3200	1/29	36	12.0	2.0	17.3
Grass Mtn. No. 2	21B27	2900	11/27	6	1.8	0.0	2.1
			1/2	11	2.8	0.9	5.8
			1/29	28	8.5	3.3	15.2
Grass Mtn. No. 3	21B28	2100	1/2	7	1.3	1.1	2.2
			1/29	18	4.8	0.0	5.2

Average based on 1963-77 average
 † Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO FEBRUARY 1, 1979 - APPENDIX 8

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

GREEN RIVER (Cont.)

Lester Creek	21B29	3100	11/27	13	1.9	2.0	2.7
			1/2	32	10.1	2.5	8.5
			1/29	48	13.0	6.8	17.5
Lynn Lake	21B50	4000	11/27	2	0.7	0.0	2.7
			1/2	28	9.9	1.2	8.5
			1/29	42	14.9	2.3	18.2
Sawmill Ridge	21B31	4700	11/27	12	2.0	9.0	5.6
			1/2	42	13.6	17.3	13.7
			1/29	54	16.3	21.2	27.5
Snowshoe Butte	21B43SP	5000	1/29	79	26.6	32.4	40.8
Stampede Pass SP	21B10	3860	11/30	31	5.3	13.0	7.5
			12/14	43	11.1	22.5	14.0
			1/1	49	22.3	27.6	17.4
			1/15	64	21.9	33.5	24.8
			2/1	68	23.4	34.0	31.5
Twin Camp	21B30	4100	11/27	12	2.4	4.8	3.4
			1/2	36	12.0	7.5	9.4
			1/29	46	14.3	10.9	18.4

SNOQUALMIE RIVER

Olallie Meadows	21B02	3625	1/29	65	22.8	23.2	34.8
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SKYKOMISH RIVER

Stevens Pass	21B01	4070	11/14	0	0.0	10.5	3.6
			11/28	20	5.1	15.9	8.1
			12/13	45	11.8	29.0	14.7
			12/27	65	19.7	29.2	21.9
			1/11	71	23.0	37.7	30.1
			1/29	80	23.7	39.5	37.3
Stevens Pass Sand Shed	21B45	4070	11/28	13	3.7	11.0	6.4
			12/13	35	9.7	19.5	11.2
			12/27	51	15.3	21.9	15.3
			1/29	60	17.8	28.9	26.8

SKAGIT RIVER

Beaver Creek Trail	21A04	2200	1/29	25	6.6	12.8	12.2
Beaver Pass	21A01	3680	1/29	28	8.3	19.0	24.4
Brown Top Ridge +	21A28a	6000	1/29	69	21.1	43.6	48.0
Cloudy Pass +	20A22a	6500	1/28	67	20.1	-	30.0
Devils Park	20A04	5900	1/30	61	18.3	35.6	34.0
Freezeout Creek Trail	20A01	3500	1/29	22	5.5	9.6	11.5
Freezeout Meadows New	20A38	5000				20.9	28.2
Granite Creek	21A29A	3500	1/29	38	9.4	13.5	16.3
Harts Pass	20A05A	6500	1/30	59	18.4	37.1	34.5

Average based on 1963-77 average

+ Snow water equivalent estimated from aerial stadia observation

USDA SCS PORTLAND OREGON 1973

SNOW DATA TO FEBRUARY 1, 1979 - APPENDIX 9

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

SKAGIT RIVER (Cont.)

Klesilkwa	35B-Can	3700	1/30	28	6.3	12.6	10.0*
Lyman Lake	20A23A	5900	1/28	84	25.2	53.3	39.7
Meadow Cabins	20A08	1900	1/30	25	7.1	7.2	6.9
New Hozomeen Lake	21A30	2800	1/29	23	5.6	8.2	10.5
New Tashme	26A-Can	2500	1/31	31	5.7	9.7	8.5*
Rainy Pass	20A09	4780	1/30	51	15.4	37.6	30.9
Thunder Basin	20A07	4200	1/30	42	11.8	16.0	17.4

BAKER RIVER

Dock Butte +	21A11A	3800	1/25	90	31.0	-	47.4
Easy Pass +	21A07A	5200	12/28	32	9.0	36.0	32.8
			1/25	44	15.0	53.0	51.7
Jasper Pass +	21A06A	5400	12/28	95	28.0	38.0	44.6
			1/25	89	35.0	72.0	69.3
Marten Lake	21A09A	3600	12/28	90	27.0	28.0	36.6
			1/25	108	38.0	-	55.4
Mt. Blum +	21A18a	5800	12/28	50	15.0	23.0	33.1
			1/25	44	15.0	42.0	48.4
Panorama New	21A26	4300	1/15	56	18.8	38.9	38.9
			1/28	53	18.2	48.0	48.7
Schreibers Meadow	21A10A	3400	12/28	52	16.0	17.0	26.0
			1/25	64	22.0	-	41.0
S. F. Thunder Creek +	21A14A	2200	1/25	16	6.0	0.0	10.0
Watson Lakes	21A08A	4500	12/28	66	19.0	22.0	29.4
			1/25	72	25.0	37.0	44.4

NOOKSACK RIVER

Glacier Creek	21A23	3700	11/28	4	1.0	6.9	6.9
			1/29	44	13.0	-	19.7
Panorama New	21A26	4300	1/15	56	18.8	38.9	38.9
			1/28	53	18.2	48.0	48.7

O L Y M P I C P E N I N S U L ADUNGENESS RIVER

Deer Park	23B04	5200	1/29	35	9.1	10.1	15.2
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MORSE CREEK

Cox Valley	23B14	4500	1/28	81	14.8	22.6	29.1
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ELWHA RIVER

Hurricane	23B03	4500	1/28	29	7.8	9.1	16.4
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Average based on 1963-77 average

+ Snow water equivalent estimated from aerial stadia observation

USDA SCS PORTLAND OREGON 1973

* Average for years of record

PRECIPITATION STORAGE GAGES

Amount of precipitation in inches that has accumulated since the previous measurement.

BAW FAW PEAK

Not reported

BIG BOULDER CREEK

11/8/77
7/6/78 24.75
7/13/78 1.13
8/21/78 .09
10/3/78 3.10

BUMPING RIDGE

6/9/77
8/22/78 39.12
9/14/78 3.25

CANTON CREEK

9/28/77 Recharge
10/13/77 0.1
11/4/77 3.5
11/29/77 6.3
12/5/77 5.3
12/7/77 1.3
2/2/78 7.6
2/14/78 0.7
3/2/78 0.8
3/14/78 1.0
3/20/78 0.0
4/10/78 1.3
4/26/78 1.7
5/15/78 1.8
6/5/78 1.4
6/28/78 0.7
8/1/78 0.2
8/28/78 1.0
9/27/78 3.1
11/1/78 1.1
1/31/79 17.9

CARNATION 15E

10/8/77
11/2/77 5.96
12/13/77 24.29
3/4/78 36.85
4/4/78 8.30
5/2/78 5.33
6/3/78 8.52
7/1/78 3.83
8/16/78 6.60
9/5/78 4.69
10/3/78 9.37
11/4/78 6.61

CEDAR FALLS 4SE

10/4/77
11/2/77 9.58
12/5/77 28.76
3/2/78 26.84
4/4/78 7.88
5/2/78 6.60
6/1/78 9.16
7/5/78 2.77
8/7/78 2.34
8/17/78 6.60
9/5/78 7.24
11/2/78 3.41

CEDAR FALLS 5SE

10/3/77
11/2/77 3.62
12/5/77 18.96
3/1/78 21.51
3/31/78 5.11
5/2/78 4.26
5/31/78 7.24
7/5/78 2.35
8/11/78 2.13
9/6/78 4.26
10/2/78 6.18
11/3/78 2.98

CEDAR FALLS 7SE

10/3/77
11/2/77 9.37
12/5/77 28.11
3/1/78 28.33
4/3/78 7.24
5/1/78 5.76
5/30/78 7.45
7/5/78 3.20
8/15/78 3.83
9/5/78 4.05
10/2/78 7.03
11/2/78 2.76

CEDAR FALLS 7SSE

10/4/77
11/2/77 9.80
3/2/78 63.47
4/4/78 7.23
5/2/78 7.24
6/1/78 7.67
7/5/78 2.13
8/15/78 5.11
9/5/78 1.49
10/2/78 6.39
11/2/78 3.20

CEDAR FALLS 8SE

10/3/77
11/1/77 6.39
12/12/77 31.31
3/1/78 14.91
4/3/78 5.54
5/2/78 5.11
5/30/78 6.39
7/5/78 2.98
8/11/78 1.49
9/15/78 4.68
10/2/78 6.17
11/2/78 1.28

CEDAR FALLS 10SE

10/3/77
11/2/77 11.29
12/5/77 36.28
4/3/78 35.36
5/2/78 6.82
5/30/78 7.88
7/5/78 4.26
8/15/78 4.26
9/5/78 3.40
10/2/78 7.46
11/2/78 3.19

PRECIPITATION STORAGE GAGES (Continued)

CONSULTANT CREEK

10/8/77	
11/2/77	7.65
12/3/77	22.05
4/4/78	44.10
5/2/78	7.20
6/3/78	8.32
7/1/78	4.04
8/16/78	10.36
9/5/78	4.50
10/3/78	9.22
11/4/78	9.44

DRY CREEK

10/8/77	
11/2/77	7.64
3/4/78	57.38
4/4/78	8.78
5/2/78	6.98
6/3/78	6.98
7/1/78	4.06
8/17/78	10.57
9/5/78	4.72
10/3/78	9.22
11/4/78	11.02

FROZEN MOUNTAIN

10/8/77	
3/4/78	70.43
4/4/78	8.77
5/2/78	6.76
6/3/78	9.46
7/1/78	4.96
8/17/78	8.10
9/5/78	2.15
10/3/78	12.93
11/4/78	9.22

GLACIER CREEK

10/7/77	
6/1/78	89.50
10/5/78	19.55

GRASS MTN. #1

9/28/77	
11/4/77	3.5
12/7/77	15.7
2/10/78	9.4
3/20/78	3.7
4/10/78	0.4
5/19/78	4.5
6/5/78	1.1
6/28/78	1.1
8/1/78	0.4
8/28/78	1.8
9/27/78	3.2
10/3/78	0.2
11/1/78	1.3
12/13/78	9.9
1/31/79	6.3

GREEN RIVER II

9/26/77	
10/5/77	0.3
11/3/77	0.2
11/30/77	4.3
12/9/77	4.3
12/15/77	2.1
1/6/78	0.9
2/7/78	1.2
2/16/78	0.2
3/2/78	0.4
3/29/78	0.9
4/19/78	0.7
7/31/78	3.2
9/27/78	2.2
10/5/78	0.2
11/27/78	3.2

LESTER 5NNE

10/4/77	
11/1/77	7.02
5/31/78	74.55
7/5/78	2.99
8/17/78	2.55
9/6/78	2.77
10/2/78	5.96
11/2/78	1.49

LESTER 7NNW

10/4/77	
12/2/77	42.18
3/31/78	21.72
5/3/78	4.90
5/31/78	7.03
7/5/78	2.13
8/14/78	1.49
9/6/78	4.90
10/3/78	4.68
11/2/78	2.35

LESTER 8N

10/4/77	
11/1/77	7.67
4/5/78	65.18
5/3/78	5.75
5/30/78	8.09
7/5/78	2.34
8/14/78	1.49
9/6/78	3.83
10/2/78	6.82
11/2/78	1.70

LESTER 8NNW

10/4/77	
11/1/77	7.03
12/12/77	38.98
3/1/78	15.98
3/31/78	6.18
5/3/78	4.26
5/30/78	7.24
8/14/78	Recharge
9/6/78	3.20
10/13/78	5.11
11/2/78	1.91

LESTER 10NNW

10/4/77	
11/1/77	8.52
12/5/77	30.03
3/1/78	25.14
4/3/78	6.38
5/1/78	5.54
6/7/78	8.31
7/6/78	4.26
8/17/78	0.85
9/5/78	5.11
10/3/78	7.24
11/3/78	3.84

PRECIPITATION STORAGE GAGES (Continued)

LESTER 11NW

10/3/77	
11/1/77	7.03
12/12/77	34.72
3/1/78	16.40
4/3/78	6.39
5/3/78	5.54
5/30/78	7.67
7/6/78	4.04
8/11/78	0.22
9/6/78	4.90
10/2/78	6.39
11/3/78	2.77

MIDDLE FORK NOOKSACK

10/6/77	
5/31/78	91.85
10/5/78	18.50

MIDDLE FORK TAYLOR

10/3/77	
11/3/77	7.25
12/1/77	17.25
3/2/78	31.10
3/31/78	6.17
5/1/78	8.31
6/4/78	7.88
7/1/78	2.34
8/4/78	2.77
9/5/78	2.55
10/1/78	10.23
11/1/78	1.70

MT. INDEX

10/8/77	
11/2/77	9.00
3/4/78	65.03
4/4/78	8.78
5/2/78	13.05
6/3/78	4.04
7/1/78	4.73
8/17/78	9.68
9/5/78	5.62
10/3/78	9.90
11/4/78	9.22

MORSE LAKE

6/10/77	
7/12/78	86.25
8/22/78	2.50

NORTH FORK TAYLOR

10/3/77	
11/3/77	5.97
12/1/77	11.28
3/2/78	26.84
3/31/78	6.39
5/1/78	8.31
6/4/78	5.96
7/1/78	2.56
8/4/78	2.56
9/5/78	4.48
10/1/78	8.52
11/4/78	7.89

PARK CREEK RIDGE

10/4/77	
10/11/78	64.75

PORT ANGELES 11S

9/15/77	
8/16/78	40.10

RUSTY CREEK

1/27/78	
2/24/78	5.40
3/29/78	2.90
4/27/78	5.70
5/30/78	1.80
6/27/78	1.80
7/31/78	3.40
8/29/78	2.75
9/29/78	8.30
10/30/78	0.20
11/28/78	1.15
12/29/78	0.55
1/31/79	0.70

SALMON MEADOWS

1/27/78	
2/23/78	6.00
3/29/78	2.90
4/26/78	6.00
5/30/78	2.50
6/27/78	0.80
7/31/78	3.20
8/29/78	2.00
9/29/78	3.25
10/30/78	0.50
11/29/78	1.00
12/29/78	0.75
1/30/79	1.00

SPRUCE SPRINGS

10/1/77	
10/1/78	44.05

SKYKOMISH 7½W

10/5/77	
6/6/78	136.10
7/8/78	3.62
8/21/78	8.52
9/9/78	4.90
9/30/78	10.65

TAYLOR CREEK

10/3/77	
11/3/77	4.69
12/1/77	11.29
3/2/78	22.15
3/31/78	5.54
5/1/78	7.45
6/4/78	6.82
7/1/78	1.28
8/4/78	1.49
9/5/78	3.83
10/1/78	-14.91
11/1/78	13.21

TROUGH # 2

11/8/77	
9/20/78	31.00

TRUCK HILL

Vandalized - No record	
8/18/78	
11/4/78	24.75

UPPER WHEELER

1/27/78	
2/26/78	3.15
3/27/78	3.40
4/29/78	3.00
5/29/78	1.20
6/30/78	1.30
7/28/78	0.00
8/29/78	0.10
9/30/78	1.80
10/31/78	Recharge
11/30/78	3.20
12/31/78	1.50
1/30/79	1.40

PRECIPITATION STORAGE GAGES (Continued)

YELLOW CREEK

10/8/77	
11/2/77	6.98
12/3/77	13.06
3/4/78	23.40
4/4/78	6.74
5/2/78	7.43
6/3/78	6.08
7/1/78	2.26
8/18/78	6.97
9/5/78	3.60
10/3/78	6.74
11/4/78	6.76

Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Ministry of the Environment, Water
Investigations Branch, Victoria, British Columbia

States:

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal:

Department of the Army
Corps of Engineers
U. S. Department of Agriculture
Forest Service
U. S. Department of Commerce
NOAA, National Weather Service
U. S. Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

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